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EXAMINER

MENON, KRISHNAN S

ART UNIT PAPER NUMBER

1723

DATE MAILED: 09/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/615,231

Applicant(s)

ANGELINI ET AL.

Examiner

Krishnan S. Menon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 02 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) 27-36 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18, 20-22 and 24-26 is/are rejected.
- 7) ☒ Claim(s) 19 and 23 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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### **DETAILED ACTION**

Claims 1-36 are pending, of which claims 27-36 are withdrawn from consideration as non-elected invention.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 8 recites the limitation "said thermoplastic polymer binder". There is insufficient antecedent basis for this limitation in the claim.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-14, 16-18, 20-22, 24 and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by, or in the alternative, under 35 USC 103(a) as being obvious over, Shinjou et al (US 4,795,559).

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Claims 1, 17 and 21: Shinjou teaches a composite support for a semipermeable membrane (abstract) having a non-woven fabric first layer of continuous polyester fibers (high density melt-blown layer: col 4 lines 1-3 and example 4) and a non-woven second layer of discrete length polyester fibers (low density layer: col 3 lines 12-35 and example 4) as claimed. The membrane is taught as cast on the low density side of the laminate (see column 6 lines 40-43 and the description of the problem with coating penetration in column 2 lines 5-21). The high density layer is melt-blown, which is similar to spun-bonded (no structural difference between the claimed spun-bonded and the reference teaching of melt-blown), and the low-density layer of discrete fibers is not wet-laid in the reference, but dry air laid or carded (again, no structural difference between the wet-laid layer of the claim and the specific teaching of the dry-laid layer of the reference). However, spun-bonded or melt-blown and wet-laid or dry-laid relate to process of making the layers, and is unpatentable as the product structure is not discernable based on the process. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

The polyester polymer binder as in claims 17 and 21 is inherent in the support taught by the reference even if the term 'binder' is not used – para linking columns 4 and 5. Also see col 3 lines 30-36: conjugate fibers have lower melting point.

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Semipermeable membrane or porous polymer layer on the second surface (surface of the wet-laid layer, which would be the low density layer in the reference) as in claim 21: col 6 lines 38-46.

Claims 2-7: all fibers are thermoplastic and polyester – abstract, col 3 line 5 – col 5 line 2.

Claims 9,10: fiber dimensions – examples, abstract, col 3 line 5 – col 4 line 34.

Claims 11,12: basis weight is inherent, since the fibers and the dimensions are the same. The express, implicit, and inherent disclosures of a prior art reference may be relied upon in the rejection of claims under 35 U.S.C. 102 or 103. "The inherent teaching of a prior art reference, a question of fact, arises both in the context of anticipation and obviousness." In re Napier, 55 F.3d 610, 613, 34 USPQ2d 1782, 1784 (Fed. Cir. 1995) (affirmed a 35 U.S.C. 103 rejection based in part on inherent disclosure in one of the references). See also In re Grasselli, 713 F.2d 731, 739, 218 USPQ 769, 775 (Fed. Cir. 1983).

Claims 13,14, 16, 24 and 26: porous polymer layer or membrane: the reference teaches the generic membrane and, specifically, polysulfone – col 6 lines 38-46. Other polymers in the Markush group are considered obvious variants of polysulfone because the invention claimed is essentially for a membrane support.

Claim 20: calendered – col 5 lines 3-10

Claim 8,18, 22: polyester copolymer binder having a low melting point. Shinjou in col 4 line 64 – col 5 line 2 describe how the lamination is done with mixture of drawn and undrawn fibers or conjugate fibers. Conjugate fibers are taught as having melting

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point 120-220C (col 3 lines 31-36). The reference also inherently teaches a well-known fact that amorphous polyester fiber has a lower melting point than the drawn (crystalline) fibers (col 4 lines 16-34). Thus the reference teaches a lower-melting polyester. The binder would be inherently present at the interface because of the lamination (claim 22).

For the inherent low-melting property of undrawn polyester fiber, please see US patent to Newman, US 4,039,711, at col 3 lines 12-23.

2. Claims 1-10, 12, 17,18 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Dijkema et al (US 5,399,422).

Claims 1,5: Dijkema teaches a composite comprising a spun-bonded non-woven layer of continuous thermoplastic polymer and a wet-laid non-woven layer of discrete fibers of thermoplastic polymer as claimed. The spun-bonded is polyester; wet-laid has thermoplastic binder in the form of fibers (see column 2 lines 33-67). The preamble, 'support for semipermeable membrane' is intended use. A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987)

Claims 2,3: thermoplastic binder in fiber form – see column 2 lines 33-67

Claims 4-7: both continuous and discrete fibers are of same material – polyester – see examples 1 and 3, especially 3. Example 1 has polyamide in the wet-laid, and

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polyamide skin in the fibers of the spun-bonded. Both layers are bonded together by the binder – see column 4 lines 5-8. Please note that the wet-laid layer also contain glass fibers, but then the claim is open-ended.

Claim 8: Example 3 polyester co-polymer.

Claim 9: length and denier of the filaments – see examples. (1 denier is about 6 microns for polyester or polyamide)

Claim 10: average thickness of spun-bonded filaments of 23 or 38 microns falls in the range of 1-10 denier.

Claim 12: the gsm of the layers – see examples, especially 2. 30 gsm for the wet-laid, 50 gsm for the spun-bonded and total would be 80 gsm.

Claims 17 and 18: the composite as in the example 2 has copolyester fibers for binder; column 2 lines 33-51 teaches the spun bonded with polyester fibers, and having binder same as that of the wet-laid. Claim recites spun-bonded first layer with polyester fibers, and wet-laid second with polyester fibers, and polyester binder present in first and second layer. This does not differentiate polyester fibers in the wet-laid layer as separate and distinct from the polyester binder fibers in the wet-laid layer. The lower melting temperature of the binder is implied in the description in column 2 lines 22-33 (binder melts .... to hold the layers...; the endless filament does not melt, ... jacket melts) and the statement "thermoplastic binders of this kind are sufficiently known" in line 50-51. "[I]n considering the disclosure of a reference, it is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom." In re Preda, 401

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F.2d 825, 826, 159 USPQ 342, 344 (CCPA 1968); In re Lamberti, 545 F.2d 747, 750, 192 USPQ 278, 280 (CCPA 1976).

Claim 20: calendered surface – heat and pressure treatment, and example 1.

3. Claims 1,2,4-7 and 9-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schortmann (US 5,204,165).

Schortmann teaches a composite non-woven laminate having a spun bonded layer and a wet-laid layer (abstract and column 2 lines 14-16), both layers containing polyester (column 3 lines 14-45), fibers in wet laid has 1.5 and 0.5 or 0.6 denier, 0.5 in (about 10 mm) length, spun bonded is about 1.5-10 denier, thermoplastic binder (column 4 lines 4-17), the weight of the layers fall in the range claimed (examples); and the wet-laid layer has the water-repellent padding on it, which is like an adhered polymer layer (fluorocarbons or silicones) (see column 4 lines 18-35).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 15 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinjou'559 as applied to claims 14 or 21 above and further in view of Cadotte et al (US 4,765,897).



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Shinjou teaches a polymeric membrane over the support layer but does not specifically teach a porous polymer layer on the support, and then the semipermeable membrane adhered to the surface of the porous polymer layer. However, such membrane is well known in the art as taught by Cadotte – col 3 lines 1-37, for desalination and other such applications. It would be obvious to one of ordinary skill in the art at the time of invention to use the support taught by Shinjou for making such reverse osmosis membranes as taught by Cadotte because of the superior structural qualities of the Shinjou support, like strength, non-peeling, no-pinholes, etc – see Shinjou col 1 lines 9-31.

5. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dijkema'422.

Claim 11 differs from the teaching of the reference in the basis weight of the spun-bonded non-woven. The claim recites about 10-35 gsm, the reference does not specify any range for this weight, and has 50, 100 or 200 in the examples. However, the weight of the spun-bonded layer would have a direct relation to the thickness. It would be obvious to one of ordinary skill in the art at the time of invention to have the basis weight or thickness optimized for the specific application based on strength required. Thickness of the composite, etc. Also, a basis weight of 50 g/m<sup>2</sup> is not significantly off compared to the range “about 10-35 gsm”.

***Allowable Subject Matter***

Claims 19 and 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The binder recited in claims 19 and 23 is a lower melting copolymer of polyester and is present in both the spun bonded and wet laid layers, which is not taught by the references.

### ***Response to Arguments***

Applicant's arguments filed 8/2/05 have been fully considered but they are not persuasive.

In response to the argument that the spun bonded technology and the melt-blown technology are different: Examiner agrees that the two are different manufacturing processes. However, the argument and the supporting evidences only attest to the fact that the processes are different, but fail to show a structural difference in the resulting product. The structural limitations claimed are anticipated by the reference in the instant claims. Applicant needs to show and claim specific structural differences for patentability. In re Thorpe.

In response to the arguments that the wet-laid process and dry-laid process are different, again, the examiner agrees that the process are different. However, the product as claimed is structurally anticipated by the reference. Argument that wet-laid non-woven are typically formed from shorter fibers compared to the dry process, etc.,

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do not suffice for a showing of structural difference between the claimed subject matter and the teaching of the reference.

With respect to the obviousness type rejection, it may be noted that the obviousness type rejection in the alternative is applied according to the case law in *re Thorpe*. ONCE A PRODUCT APPEARING TO BE SUBSTANTIALLY IDENTICAL IS FOUND AND A 35 U.S.C. 102 /103 REJECTION MADE, THE BURDEN SHIFTS TO THE APPLICANT TO SHOW AN UNOBTAINABLE DIFFERENCE. "The Patent Office bears a lesser burden of proof in making out a case of prima facie obviousness for product-by-process claims because of their peculiar nature" than when a product is claimed in the conventional fashion. In *re Fessmann*, 489 F.2d 742, 744, 180 USPQ 324, 326 (CCPA 1974). Once the examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobtainable difference between the claimed product and the prior art product. In *re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983) (The claims were directed to a zeolite manufactured by mixing together various inorganic materials in solution and heating the resultant gel to form a crystalline metal silicate essentially free of alkali metal. The prior art described a process of making a zeolite which, after ion exchange to remove alkali metal, appeared to be "essentially free of alkali metal." The court upheld the rejection because the applicant had not come forward with any evidence that the prior art was not "essentially free of alkali metal" and therefore a different and unobtainable product.). *Ex parte Gray*, 10 USPQ2d 1922 (Bd.

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Pat. App. & Inter. 1989) (The prior art disclosed human nerve growth factor (b-NGF) isolated from human placental tissue. The claim was directed to b-NGF produced through genetic engineering techniques. The factor produced seemed to be substantially the same whether isolated from tissue or produced through genetic engineering. While the applicant questioned the purity of the prior art factor, no concrete evidence of an unobvious difference was presented. The Board stated that the dispositive issue is whether the claimed factor exhibits any unexpected properties compared with the factor disclosed by the prior art. The Board further stated that the applicant should have made some comparison between the two factors to establish unexpected properties since the materials appeared to be identical or only slightly different.).

In the present case, applicant has provided evidences showing the processes are different, which the office recognizes. However there is no showing that the product claimed is structurally different compared to the specific teaching of the reference.

THE USE OF 35 U.S.C. 102 /103 REJECTIONS FOR PRODUCT-BY-PROCESS CLAIMS HAS BEEN APPROVED BY THE COURTS "[T]he lack of physical description in a product-by-process claim makes determination of the patentability of the claim more difficult, since in spite of the fact that the claim may recite only process limitations, it is the patentability of the product claimed and not of the recited process steps which must be established. We are therefore of the opinion that when the prior art discloses a product which reasonably appears to be either identical with or only slightly different than a product claimed in a product-by-process claim, a rejection based

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alternatively on either section 102 or section 103 of the statute is eminently fair and acceptable. As a practical matter, the Patent Office is not equipped to manufacture products by the myriad of processes put before it and then obtain prior art products and make physical comparisons therewith." In re Brown, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972).

In response to the argument that the examiners rationale would result in reversing the location of the membrane that is applied to the support (last paragraph of page 4 of the arguments) and that the rationale of the rejection would make the coating on the spun-bond layer, not the wet-laid layer: This argument has no basis because the reference clearly states that the coating is on the low density side. The low density side is clearly identified in the rejection as the "dry-laid" side, which is equivalent to the wet-laid as claimed by the applicant.

Argument re claims 19 and 23 is moot – the claims are now indicated as having allowable subject matter.

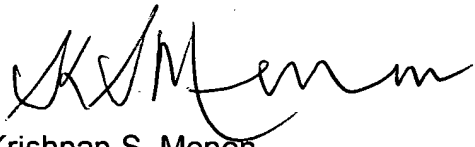
### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krishnan S. Menon whose telephone number is 571-272-1143. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L. Walker can be reached on 571-272-1151. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'K S Menon', with a stylized flourish at the end.

Krishnan S. Menon  
Patent Examiner  
9/9/05